

Remarks

By the above, applicants have amended the application so that no multiply-dependent claim depends from another multiply-dependent claim to comply with 37 C.F.R. § 1.75(c). It is respectfully submitted that the above amendments are not narrowing amendments pursuant to *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., Ltd.*, 122 S. Ct. 1831 (2002) (see also *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., Ltd.*, 234 F.3d 558 (Fed. Cir. 2000) (*en banc*)), since they do not change the scope of the claims as originally filed. Entry of the above amendments is respectfully requested.

Respectfully submitted,

U.C. 29 Reg No. 36,196

Date 22 Oct 2002

for Francis E. Morris 24,615
Francis E. Morris (Reg. No.)

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EXHIBIT A
MARKED-UP VERSION OF THE CLAIMS
FOR U.S. APPLICATION SERIAL NO. 10/009,552

4. (Amended) A method as claimed in claim 1[, 2, or 3], wherein data to be outputted as part of frames defined by said output frame synchronization signal is stored in a memory prior to transmission thereof, the data fill level of said memory reflecting the phase relationship between the output frame synchronization signal and the input frame synchronization signal that is associated therewith, and wherein the phase relationship between the output frame synchronization signal and the node common synchronization signal is adjusted so as to maintain a selected data fill level of said memory.

5. (Amended) A method as claimed in [any one of the preceding claims] claim 1, wherein frames defined by said frame synchronization signals occur regularly, are of fixed size, and are each divided into a plurality of fixed sized time slots.

6. (Amended) A method as claimed in [any one of the preceding claims] claim 1, comprising:

transmitting, in addition to said output frame synchronization signal, at least one other output frame synchronization signal, each output frame synchronization signal being generated using said node common synchronization signal as reference for synchronization; and

adjusting each output frame synchronization signal individually to show a respective phase relationship in relation to said node common synchronization.

8. (Amended) A method as claimed in [any one of the preceding claims] claim 1, comprising defining said node common frame synchronization signal in such a way that a change in the selection of input frame synchronization signal to define said node common synchronization signal does not cause any phase shifts in said node common synchronization signal.

10. (Amended) A method as claimed in [any one of the preceding claims] claim 1, wherein said output frame synchronization signal is to be synchronized in relation to an input frame synchronization signal in such a way that:

- a) said output frame synchronization signal is permitted to show an arbitrary phase difference in relation to said input frame synchronization signal;
- b) said output frame synchronization signal is permitted to show an acceptable phase jitter in relation to said input frame synchronization signal; and
- c) said output frame synchronization signal is not permitted to show any persistent phase drift in relation to said input frame synchronization signal.

11. (Amended) A method as claimed in [any one of the preceding claims] claim 1, wherein said method is performed in a time division multiplexed circuit switched network.

12. (Amended) A method as claimed in [any one of the preceding claims] claim 1, wherein each one of said frame synchronization signals is an in-band frame start signal that is transmitted on a respective link to designate the start of each frame transmitted thereon.

17. (Amended) An apparatus as claimed in [any one of claims 14, 15, or 16] claim 14, said means (300) for providing a node common synchronization signal being arranged to derive said node common synchronization signal in such a way that a change of input frame synchronization signal to be used to derive the node common synchronization signal does not cause any phase shifts in said node common synchronization signal.

18. (Amended) An apparatus as claimed in [any one of claims 14-17] claim 14, said apparatus being arranged to synchronize said output frame synchronization signal in relation an input frame synchronization signal in such a way that:

- a) said output frame synchronization signal is permitted to show an arbitrary phase difference in relation to said input frame synchronization signal;
- b) said output frame synchronization signal is permitted to show a limited phase jitter in relation to said input frame synchronization signal; and
- c) said output frame synchronization signal is not permitted to show any persistent phase drift in relation to said input frame synchronization signal.

19. (Amended) An apparatus as claimed in [any one of claims 14-18] claim 14, wherein said apparatus is operating in a time division multiplexed circuit switched network.



EXHIBIT B

THE CLAIMS WHICH WILL BE PENDING
UPON ENTRY OF THE PRELIMINARY AMENDMENT
FOR U.S. APPLICATION SERIAL NO. 10/009,552

1. A method for synchronizing operation at a node of a communication network, said method comprising:

receiving two or more input frame synchronization signals and transmitting an output frame synchronization signal, the output frame synchronization signal being associated with a predefined one of said input frame synchronization signals;

selecting one of said input frame synchronization signals to define a node common frame synchronization signal;

generating the output frame synchronization signal using the node common frame synchronization signal as reference for synchronization;

determining a phase relationship between the output frame synchronization signal and the input frame synchronization signal that is associated therewith; and, based thereupon adjusting said phase relationship by adjusting a phase relationship between the output frame synchronization signal and the node common synchronization signal when generating the output frame synchronization signal.

2. A method as claimed in claim 1, wherein said adjusting step is performed with the purpose of controlling the time difference between each transmission of the output frame synchronization signal each reception of the input frame synchronization signal that is associated therewith.

3. A method as claimed in claim 2, wherein said adjusting step comprises increasing said phase difference if said time difference is smaller than a selected time difference, and decreasing said phase difference if said time difference is larger than said selected time difference.

4. A method as claimed in claim 1, wherein data to be outputted as part of frames defined by said output frame synchronization signal is stored in a memory prior to transmission thereof, the data fill level of said memory reflecting the phase relationship between the output frame synchronization signal and the input frame synchronization signal that is associated therewith, and wherein the phase relationship between the output frame

synchronization signal and the node common synchronization signal is adjusted so as to maintain a selected data fill level of said memory.

5. A method as claimed in claim 1, wherein frames defined by said frame synchronization signals occur regularly, are of fixed size, and are each divided into a plurality of fixed sized time slots.

6. A method as claimed in claim 1, comprising:
transmitting, in addition to said output frame synchronization signal, at least one other output frame synchronization signal, each output frame synchronization signal being generated using said node common synchronization signal as reference for synchronization; and

adjusting each output frame synchronization signal individually to show a respective phase relationship in relation to said node common synchronization.

7. A method as claimed in claim 1, each output frame synchronization signal being associated with a respective input frame synchronization signal, said method comprising adjusting a respective phase relationship between each respective output frame synchronization signal and the respective associated input frame synchronization signal by adjusting the respective phase relationship between each respective output frame synchronization signal and the node common frame synchronization signal.

8. A method as claimed in claim 1, comprising defining said node common frame synchronization signal in such a way that a change in the selection of input frame synchronization signal to define said node common synchronization signal does not cause any phase shifts in said node common synchronization signal.

9. A method as claimed in claim 1, comprising determining the frame phase difference between the node common synchronization signal and at least one of said input frame synchronization signals that is to define said node common synchronization signal, wherein a change into using said input frame synchronization signal to define said node common synchronization signal is performed in such a way that the determined frame phase difference between said node synchronization signal and said input frame synchronization signal is maintained.

10. A method as claimed in claim 1, wherein said output frame synchronization signal is to be synchronized in relation to an input frame synchronization signal in such a way that:

- a) said output frame synchronization signal is permitted to show an arbitrary phase difference in relation to said input frame synchronization signal;
- b) said output frame synchronization signal is permitted to show an acceptable phase jitter in relation to said input frame synchronization signal; and
- c) said output frame synchronization signal is not permitted to show any persistent phase drift in relation to said input frame synchronization signal.

11. A method as claimed in claim 1, wherein said method is performed in a time division multiplexed circuit switched network.

12. A method as claimed in claim 1, wherein each one of said frame synchronization signals is an in-band frame start signal that is transmitted on a respective link to designate the start of each frame transmitted thereon.

13. A method for synchronizing operation at a node of a communication network, comprising:

- receiving an input frame synchronization signal;
- transmitting an output frame synchronization signal that is associated with said input frame synchronization signal;
- controlling a phase relationship between the output frame synchronization signal and the input frame synchronization signal by the step of adjusting a phase relationship between the output frame synchronization signal and signal that is defined optionally using another input frame synchronization signal as reference for synchronization.

14. An apparatus in a communication network, said apparatus comprising:
an interface defined by input means (250) for receiving an input frame synchronization signal and associated output means (500) for transmitting an associated output frame synchronization signal;

means (300) for providing a node common synchronization signal derived from a currently selected one of two or more input frame synchronization signals, one thereof being the first mentioned input frame synchronization signal;

means (530; 531) for determining a phase relationship between the first mentioned input frame synchronization signal and the associated output frame synchronization signal;
means (540, 550; 541, 551) for generating said output frame synchronization signal using said node common synchronization signal as reference and, in doing so, adjusting the phase relationship between the first mentioned input frame synchronization signal and the output frame synchronization signal as desired by adjusting a phase relationship between the node common synchronization signal and the output frame synchronization signal.

15. An apparatus as claimed in claim 14, comprising means (530, 540, 550; 531, 541, 551) for generating another output frame synchronization signal using said node common synchronization signal as reference and, in doing so, adjusting a phase relationship between said another output frame synchronization signal and a respective input frame synchronization signal associated there-with by adjusting a phase difference between said another output frame synchronization signal and the node common synchronization signal.

16. An apparatus as claimed in claim 14, comprising means (450, 540; 450, 541) for adjusting said phase differences of said output frame synchronization signals in relation to said node synchronization signal so that each one of said output frame synchronization signals is controlled to show a respective phase difference in relation to said node synchronization signal, said respective phase difference being controlled individually for each respective output frame synchronization signal.

17. An apparatus as claimed in claim 14, said means (300) for providing a node common synchronization signal being arranged to derive said node common synchronization signal in such a way that a change of input frame synchronization signal to be used to derive the node common synchronization signal does not cause any phase shifts in said node common synchronization signal.

18. An apparatus as claimed in claim 14, said apparatus being arranged to synchronize said output frame synchronization signal in relation an input frame synchronization signal in such a way that:

a) said output frame synchronization signal is permitted to show an arbitrary phase difference in relation to said input frame synchronization signal;



- b) said output frame synchronization signal is permitted to show a limited phase jitter in relation to said input frame synchronization signal; and
- c) said output frame synchronization signal is not permitted to show any persistent phase drift in relation to said input frame synchronization signal.

19. An apparatus as claimed in claim 14, wherein said apparatus is operating in a time division multiplexed circuit switched network.

20. An apparatus in a communication network, comprising:
an interface comprising an input port for receiving an input frame synchronization signal and an output port for transmitting an output frame synchronization signal; and
means being arranged to control a phase relationship between the output frame synchronization signal and the input frame synchronization signal by adjusting a phase relationship between the output frame synchronization signal and a reference signal that as such is defined optionally using another input frame synchronization signal as reference for synchronization.

PATENT COOPERATION TREATY

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Commissioner
 US Department of Commerce
 United States Patent and Trademark
 Office, PCT
 2011 South Clark Place Room
 CP2/5C24
 Arlington, VA 22202
 ETATS-UNIS D'AMERIQUE
 in its capacity as elected Office

Date of mailing (day/month/year) 15 December 2000 (15.12.00)	
International application No. PCT/SE00/00873	Applicant's or agent's file reference 2008727
International filing date (day/month/year) 04 May 2000 (04.05.00)	Priority date (day/month/year) 06 May 1999 (06.05.99)
Applicant BOHM, Christer et al	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:
 09 November 2000 (09.11.00)

☐ in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was

☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	Authorized officer F. Baechler Telephone No.: (41-22) 338.83.38
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PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

RECD 23 AUG 2001

WIPO PCT

14

Applicant's or agent's file reference PC-2008727	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/SE00/00873	International filing date (day/month/year) 04.05.2000	Priority date (day/month/year) 06.05.1999
International Patent Classification (IPC) or national classification and IPC ₇ H04L 7/00		
Applicant NET INSIGHT AB et al		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 4 sheets, including this cover sheet.
- ☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of _____ sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☒ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 09.11.2000	Date of completion of this report 14.08.2001
Name and mailing address of the IPEA/SE Patent- och registreringsverket Box 5055 S-102 42 STOCKHOLM Facsimile No. 08-667 72 88 Form PCT/IPEA/409 (cover sheet) (January 1998)	Authorized officer Åsa Hällgren/EE Telephone No. 08-782 25 00

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/SE00/00873

I. Basis of the report

1. With regard to the elements of the international application:*

- ☒ the international application as originally filed
- ☐ the description:
 pages _____, as originally filed
 pages _____, filed with the demand
 pages _____, filed with the letter of _____
- ☐ the claims:
 pages _____, as originally filed
 pages _____, as amended (together with any statement) under article 19
 pages _____, filed with the demand
 pages _____, filed with the letter of _____
- ☐ the drawings:
 pages _____, as originally filed
 pages _____, filed with the demand
 pages _____, filed with the letter of _____
- ☐ the sequence listing part of the description:
 pages _____, as originally filed
 pages _____, filed with the demand
 pages _____, filed with the letter of _____

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item. These elements were available or furnished to this Authority in the following language _____ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheet/fig _____

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2 (c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item I and annexed to this report.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/SE00/00873

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	<u>1-20</u>	YES
	Claims		NO
Inventive step (IS)	Claims	<u>1-20</u>	YES
	Claims		NO
Industrial applicability (IA)	Claims	<u>1-20</u>	YES
	Claims		NO

2. Citations and explanations (Rule 70.7)

The international search has resulted in the following relevant documents:

D1: US4672299 A
D2: US5936472 A
D3: US4511859 A
D4: US4736393 A

The documents cited in the International Search Report represent the prior art. The claimed invention stated in claims 1-20 is not considered to be anticipated by these documents. None of the documents or any relevant combination of them reveal a method for synchronisation as described by these claims.

According to the arguments stated above, the invention claimed in claims 1-20 is novel, considered to involve an inventive step and have industrial applicability.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/SE00/00873

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

Claim 20 does not clearly state what defines the "reference signal". The formulation: "...a reference signal that as such is defined optionally using another input frame synchronization signal as reference for synchronization" is considered to be unclear (PCT Article 6).

Claim 13 does not clearly state that the output synchronisation signal is based on an intermediate node common frame synchronisation signal (PCT Article 6).

PATENT COOPERATION TREATY

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INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 2008727	<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> FOR FURTHER ACTION <small>see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.</small> </div> <div style="width: 50%; text-align: right;"> (Earliest) Priority Date (day/month/year) 6 May 1999 </div> </div>	
International application No. PCT/SE 00/00873	<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> International filing date (day/month/year) 4 May 2000 </div> <div style="width: 50%; text-align: right;"> (Earliest) Priority Date (day/month/year) 6 May 1999 </div> </div>	
Applicant NET INSIGHT AB ET AL.		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 3 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. ☐ Certain claims were found unsearchable (See Box I).
2. ☐ Unity of invention is lacking (See Box II).
3. ☐ The international application contains disclosure of a nucleotide and/or amino acid sequence listing and the international search was carried out on the basis of the sequence listing

☐ filed with the international application.
☐ furnished by the applicant separately from the international application,

☐ but not accompanied by a statement to the effect that it did not include matter going beyond the disclosure in the international application as filed.

☐ transcribed by this Authority.
4. With regard to the title, ☒ the text is approved as submitted by the applicant.
☐ the text has been established by this Authority to read as follows:
5. With regard to the abstract,

☒ the text is approved as submitted by the applicant.
☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.
6. The figure of the drawings to be published with the abstract is:
 Figure No. 5A

☒ as suggested by the applicant.
☐ because the applicant failed to suggest a figure.
☐ because this figure better characterizes the invention.

☐ None of the figures.

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International Bureau



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 7 :

H04L 7/00

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(11) International Publication Number:

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(81) Designated States: AE, AG, AL, AM, AT, AT (Utility model),
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CZ, CZ (Utility model), DE, DE (Utility model), DK, DK
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UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS,
MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ,
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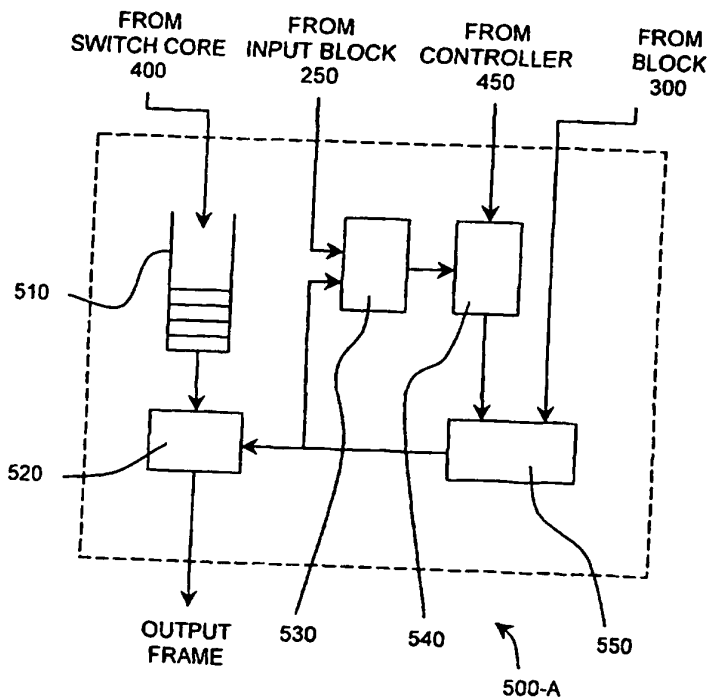
With international search report.

Before the expiration of the time limit for amending the
claims and to be republished in the event of the receipt of
amendments.

(54) Title: SYNCHRONIZATION METHOD AND APPARATUS

(57) Abstract

The present invention refers to a method and an apparatus for synchronizing operation at a node of a communication network. According to the invention, a node is arranged to receive two or more input frame synchronization signals and to transmit an output frame synchronization signal, the output frame synchronization signal being associated with a predefined one of said input frame synchronization signals. One of the input frame synchronization signals are selected to define a node common frame synchronization signal. The output frame synchronization signal is generated using the node common frame synchronization signal as reference for synchronization. A phase relationship between the output frame synchronization signal and the input frame synchronization signal that is associated therewith is determined and is adjusted by the step of adjusting a phase relationship between the output frame synchronization signal and the node common synchronization signal when generating the output frame synchronization signal.



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1
INTERNATIONAL SEARCH REPORTInternational application No.
PCT/SE 00/00873

A. CLASSIFICATION OF SUBJECT MATTER

IPC7: H04L 7/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7: H04L, H04J

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4672299 A (G.J. GRIMES ET AL.), 9 June 1987 (09.06.87), column 1, line 37 - column 3, line 6; column 5, line 5 - column 6, line 11, figure 3, abstract --	1-5,10-14, 18-20
A	US 5936472 A (Y. WAKAYAMA), 10 August 1999 (10.08.99), column 4, line 14 - column 5, line 49, figure 3, abstract --	3
A	US 4511859 A (L.C. DOMBROWSKI), 16 April 1985 (16.04.85), column 2, line 16 - column 3, line 6, claim 1, abstract --	1-20

☒ Further documents are listed in the continuation of Box C.☒ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

21 Sept 2000

Date of mailing of the international search report

28 09- 2000

Name and mailing address of the ISA:

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Åsa Hällgren/AE

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2
INTERNATIONAL SEARCH REPORT

International application No.
PCT/SE 00/00873

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>US 4736393 A (G.J. GRIMES ET AL.), 5 April 1988 (05.04.88), column 3, line 1 - line 28; column 3, line 49 - line 54</p> <p style="text-align: center;">-- -----</p>	1-20

INTERNATIONAL SEARCH REPORT

Information on patent family members

01/08/00

International application No.

PCT/SE 00/00873

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